

CLAIMS

1. Detection method of a molecular recognition reaction between a first molecule fixed on a support and a second molecule present in a solution to be tested, without labelling, in which the detection is
5 made by a photothermal method.

2. Detection method of a hybridization reaction of nucleic acids between a first and second molecule of nucleic acid, without labelling, consisting of the
10 following steps:

- fixation of the first nucleic acid molecule on a solid support,

- contacting of the first nucleic acid molecule fixed on the solid support with a solution to be tested
15 suspected of containing the second nucleic acid molecule, this latter being capable of being hybridized with said first molecule, the contacting being carried out under conditions favourable for said hybridization,

- washing of the solid support to isolate a
20 detection sample formed from said first molecule fixed on the support and possibly said second molecule hybridized on said first molecule, and

- measuring the absorption of the sample by a
25 photothermal method.

3. Method according to Claim 1 or 2 in which the photothermal method is a thermal lens method.

4. Method according to Claim 1 or 2 in which the
30 photothermal method is a method of photothermal deflection in which the sample is illuminated by a pump

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beam and the absorption of the pump beam by a sample is detected by the refraction or the reflection of a probe beam.

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5. Method according to Claim 4 in which the probe and pump beams cross each other.

6. Method according to Claim 4 in which the probe and pump beams are in a transverse configuration or in an approximately collinear configuration.

7. Method according to any one of Claims 4 to 6 in which the pump beam is chosen from a pulsed laser, a continuous intensity modulated laser or polychromatic light.

8. Method according to any one of Claims 4 to 7 in which the refraction or the reflection of the probe beam is detected by means of multielement photodiode or by means of a simple photodiode receiving only part of the probe beam.

9. Method according to any one of Claims 4 to 8 in which the pump beam is a beam from a laser chosen from a continuous argon laser at 275 nm, a quadrupled YAG laser with a wavelength of 266 nm or polychromatic light.

10. Method according to anyone of Claims 4 to 9 in which the probe beam has a wavelength that is not absorbed by the substrate nor the present molecules.

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11. Method according to Claim 3 in which an
incident beam is used, said beam being a beam from a
laser chosen from a continuous argon laser at 275 nm, a
5 quadrupled YAG laser with a wavelength of 266 nm or
polychromatic light.

12. Method according to any one of the preceding
claims comprising in addition a step for comparing of
10 the measurement of absorption of the sample with that
of a control sample.

13. Use of a method according to any one of Claims
1 to 12 for a test, a diagnosis or a detection of
15 hybridization of nucleic acids.

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